

## CLAIMS

1. A combination cold hearth and flanged skull for producing refined metal comprising:

a cold hearth having a hollowed body with cooled interior surface which defines an upwardly open skull-receiving chamber in which a skull of metal may be disposed and terminating at an upper rim; and

a flanged skull having an outwardly extending upper peripheral flange of solidified metal adapted to overlap said upper rim of said hearth and seal thereagainst such that molten metal disposed in a melt pool formed on said skull during metal refining is prevented from overflowing into any gap present between said skull and said hearth, damaging the insulating material applied in the gap and reducing the effect to prevent heat loss from the skull to the hearth.

2. The combination defined in Claim 1 in which the hearth comprises a bottom wall and an upstanding peripheral wall which define the chamber.

3. The combination defined in Claim 2 in which the chamber of the hearth is rectangular in configuration and the skull is of a corresponding rectangular shape, said chamber having a rectangular bottom surface, a pair of rectangular input and output end surfaces, and a pair of rectangular side surfaces which define said chamber.

4. The combination defined in Claim 3 in which the hearth is rectangular in configuration, comprising a rectangular bottom wall having the bottom surface, an input end wall having the input end surface, an output end wall having the output end surface, and a pair of elongate side walls respectively having the side surfaces, said walls having respective inwardly disposed upper recesses which comprise the peripheral recess of said hearth.

5. The combination defined in Claim 2 in which the hearth is water-cooled.

6. The combination defined in Claim 5 in which the hearth is substantially made of copper with a plurality of cooling pipes contained therewithin through which cooling water may be circulated.

7. The combination defined in Claim 1 in which the upper rim of the hearth has an inwardly disposed peripheral recess; and in which the peripheral flange of the skull is received within the recess.

8. The combination defined in Claim 7 in which the peripheral recess of the hearth and the peripheral flange of the flanged skull include respective

substantially horizontally-disposed seal surfaces which juxtapose to seal the area where the skull and hearth are adjacent one another.

9. The combination defined in Claim 8 in which the peripheral recess of the hearth and the peripheral flange of the flanged skull include respective substantially vertically-disposed surfaces abutting the seal surfaces at substantially a ninety-degree included angle.

10. The combination defined in Claim 1 in which the flange is removable and replaceable.

11. A flanged skull for use with a cold hearth having a hollowed body with cooled interior surface which defines an upwardly open skull-receiving chamber terminating at an upper rim comprising:

a body having an upper portion and a lower portion; and

an upper peripheral flange of solidified metal adapted to overlap and rest on said upper rim to support said skull within said hearth and seal thereagainst such that molten metal disposed in a melt pool formed on said skull is prevented from overflowing present between said skull and said hearth.

12. The flanged skull defined in Claim 11 in which the flanged skull is rectangular in configuration for use with corresponding hearths having an interior chamber of rectangular configuration.

13. The flanged skull defined in Claim 12 in which the peripheral flange includes a substantially horizontally-disposed seal surface which mates juxtaposed with hearths having a mating substantially horizontally-disposed seal surface to support said skull within the hearth and seal thereagainst.

14. The flanged skull defined in Claim 13 in which the peripheral flange includes a substantially vertically-disposed seal surface which abuts the seal surface at substantially a ninety-degree included angle.

15. The flanged skull defined in Claim 11 in which the flange is removable from the body.